实验数据

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | Pr3的转角θ(°) | I(uA) | | 10 | 18.8 | | 20 | 18.8 | | 30 | 18.8 | | 40 | 18.8 | | 50 | 18.8 | | 60 | 18.8 | | 70 | 19 | | 80 | 18.8 | | 90 | 19.2 | | 100 | 19.6 | | 110 | 20 | | 120 | 20.2 | | 130 | 20.8 | | 140 | 21.2 | | 150 | 21.6 | | 160 | 21.4 | | 170 | 21 | | 180 | 20.6 | | 190 | 20 | | 200 | 19.8 | | 210 | 19.2 | | 220 | 18.8 | | 230 | 18.8 | | 240 | 19.4 | | 250 | 20 | | 260 | 20.8 | | 270 | 20.6 | | 280 | 21 | | 290 | 21.8 | | 300 | 21.8 | | 310 | 21.6 | | 320 | 21.8 | | 330 | 21.2 | | 340 | 21 | | 350 | 20.4 | | 360 | 19.8 | |  |

数据分析

根据椭圆度的计算公式： 得到椭圆度约为0.93，由下图也可以看出各个角度接收到的波强度接近，可以认为基本上实现了圆极化波的要求，但也有误差存在。

误差分析

1. 由于读数产生的误差。由于电流表读数难以稳定，读数时只能获得一个近似的值，因此产生了较大误差，此误差在测量值较小时很明显，本次实验度数都在20uA附近，受到了一定的影响。
2. 发射装置在实验过程中效果不一致产生的误差。实验时注意到在记录完360°整圆周的数据后转回初始位置时，读数较开始时变大了，可以推断出发射喇叭产生的电磁波的强度随着时间的变化在逐渐变大。因此我们反复进行了实验，同时加快了记录的速度，最终得以有所改善。
3. 由于环境因素造成的误差。在复杂的环境内进行实验一定程度上影响了实验的准确性，例如其他组的电磁波喇叭的干扰，墙壁、其他仪器的反射产生的干扰等。